

*Cystopteris* will hardly work, for the indusia in *Woodsia* are said to separate into "shreds," which would apply to *W. ilvensis* but hardly to *W. obtusa*, where the indusial lobes are broad. However, these are strictly minor criticisms. The book is creditable and usable and should be in the libraries of fern students.—C.V.M.

VASCULAR PLANTS OF THE PACIFIC NORTHWEST, PART 1. By C. L. Hitchcock, A. Cronquist, M. Ownbey, and J. W. Thompson. 914 pp. 1969. University of Washington Press, Seattle, Washington 98105. \$25.00.—This, the fifth and last volume of the flora of the Pacific Northwest, completes this monumental work, the first parts of which were published several years ago. Although the last to be issued, this is the first part, which contains the treatment of the vascular cryptogams, the gymnosperms, and the monocotyledons, including the large and difficult groups Cyperaceae and Gramineae. The present part contains a glossary, a general index, and an appended list of additions and corrections to the previously published parts. The ferns and fern allies are treated by Dr. Cronquist, and very well too. The keys are accurate and usable—not too technical but technical enough when necessary. One detail is that finite verbs are sometimes used in the keys—e.g. p. 57, "... indusium which is so close to the margin ..." or "submarginal row that is protected by ..."; the use of such "which" clauses is not usual in botanical keys and is never necessary. The treatment is conservative in its recognition of varieties, species, and families. I approve of placing the true ferns all in the inclusive family Polypodiaceae at least until much more is known about their morphology, cytology, and evolution. Cronquist does indicate in the key some of the groups that have been called families, including one called "Aspidiaceae." This is an incorrect name because according to the Code of Nomenclature a family name must be based on the name of a legitimate genus, and *Aspidium* is an illegitimate generic name, superfluous when published because it originally contained the type species of several earlier generic names that ought to have been adopted, such as *Dryopteris*, *Thelypteris*, *Tectaria*, *Athyrium*, *Polystichum*, and perhaps others.



The proper family for this group depends on how finely it is split up itself into families; in the rather inclusive sense used by Cronquist, the proper name is probably Aspleniaceae, but if *Asplenium* is placed in a different family, the remainder should probably be called Dryopteridaceae. The names of the classes accepted by Cronquist are Lycopodiatae, Isoëtatae, Equisetatae, and Polypodiatae, according to a suggestion that Cronquist, Jeffrey, and Takhtajan made to the recent International Botanical Congress. However, the Congress rejected this change, and so these names should not be accepted, since the Code says that the termination for classes should be “-opsida.” The “Polypodiatae” should probably be called the Filicopsida. *Selaginella* is included in the Isoëtatae, presumably chiefly because of its heterospory, but I can't really believe that *Selaginella* is more closely allied in a phylogenetic way to *Isoëtes* than to *Lycopodium*, with which it seems obviously to have much more in common. Cronquist includes the heterosporous *Azolla* and *Marsilea* in the Polypodiatae, and so there is no a priori reason why heterospory could not have developed also within the Lycopodiatae. Types are cited, as they should be in a flora when space permits, but they are done here in a very unusual way. Normally a type is cited either after the accepted name or after the name-bringing basionym, and so it is here sometimes. But not always. For instance, in *Polypodium hesperium* Maxon (1900), the type is not cited after this original and accepted name but following the later synonym *P. vulgare* var. *hesperium* Nels. & Macbr. (1916); there does not seem to be any justification for this.

There are a number of details that ought to be commented on. The author of the combination *Cystopteris montana* (Lam.) is left undecided; the authority “Bernh.” used by Blasdell in his revision and by others is wrong; however, there seems to be no reason not to accept Desv. Mém. Soc. Linn. Paris 6: 264. 1827, as used in the “Flora Europaea,” until someone can come up with an earlier usage, which is probably not possible. The authority for *Blechnum spicant* is given as Withering (1796), but it was shown long ago by Mansfeld (Repert. Sp. Nov. 45: 202. 1938) that the



combination had been made two years previously by Roth (in Usteri, *Neue Annalen* 2(10): 46. 1794) (cf. Maxon, *Amer. Fern J.* 34: 51. 1944). The authority for *Woodwardia fimbriata* has been accidentally omitted; it is J. E. Smith in Rees; incidentally, I saw and photographed the holotype in the J. E. Smith Herbarium in the Linnean Society last spring. It is the stated intention to include all synonyms based on material from the Pacific Northwest, but one has been omitted here—*Blechnum doodioides* Hook. *Fl. Bor. Amer.* 2: 263. 1840. The type locality of this species is not definitely known, but it was collected by Douglas and surely in the Pacific Northwest; Hooker thought that it might have come from Hudson Bay, but that is obviously impossible since this species does not grow there or anywhere nearby. This synonym is of some importance, for it would be the earliest specific epithet for the plant of this area if it should ever be separated from the European type, which is not at all inconceivable. The type was a somewhat abnormal specimen with the sori somewhat interrupted.

Another synonym that has been omitted, although the type is from the area concerned, is *Woodwardia paradoxa* C. H. Wright (*Gard. Chron.* 41: 98. 1907), a synonym of *W. fimbriata*. The type was collected on a small, undesignated island off the coast of Vancouver Island, B. C., by F. W. Moore, and will presumably be in the herbarium at Kew. Strangely enough, Wright did not compare his species with *W. fimbriata* or its synonym *W. chamissoi*, but with the European *W. radicans*, apparently unaware that the Pacific Coast plant had ever been separated as a species.

*Cheilanthes lanosa* Michx. is reported for the northwest for the first time in this publication. The plant is supposed to have been collected at high elevations on Mount Jupiter in the Olympic Mountains of Washington. I have been aware of it for several years, but I have had some doubts about it. This is an eastern species and the nearest known natural occurrences are in Minnesota, more than 1,000 miles to the east. The plant on Mount Jupiter was brought down and cultivated in a garden in Brinnon, Washington, and it is possible that here it became confused with a cultivated plant of the eastern *C. lanosa*. Later attempts to



find this species again on Mount Jupiter have been unsuccessful. Following the "Flora Europaea" and some recent authors, Cronquist has adopted *Isoëtes setacea* Lam. for the common spiny-spored plant of the northern United States and Canada. This has very recently been shown to be wrong; the comment by C. Jermy (Brit. Fern Gaz. 10: 106. 1969) deserves to be quoted in full: "*Isoëtes setacea* Lam. for *L. echinospora* Dur. is an unfortunate change for which I am partly responsible. When I wrote the account of *Isoëtes* for "Flora Europaea," I was aware that Rothmaler and later Fuchs had identified the type specimen of *I. setacea* Lam. as *I. echinospora*. I had seen only a photograph and been told that the plants were immature, and I had agreed that, superficially, this specimen did indeed have the habit of *I. echinospora*. However, I have since had occasion to study this specimen in the Paris Museum and through the kindness of Mme. Tardieu-Blot I was able to remove a few immature megaspores and study them under the scanning electron microscope. Only now, after seeing some hundreds of megaspores from a wide range of species and at various stages of maturity, do I feel confident in placing the Lamarck specimen in the section *Tuberculatae* and not *Echinatae*. In other words we must revert to the *status quo* and I must apologize to Mr. Harrison and others who have taken up the name *I. setacea* Lam., the identity of which is now being investigated." This illustrates the coming importance of the scanning microscope for spore studies. The proper name for the Pacific Coast plant called *I. setacea* by Cronquist is probably *I. echinospora* Dur. Recently, Fuchs (Nova Hedw. Beih. 3: 51-78. 1962) has taken up the earlier name *I. tenella* Desv. (Mém. Soc. Linn. Paris 6: 179. 1827), but the identity of Desvaux' type (Fl. Danica t. 191) with *I. echinospora* has been challenged. As a variety the name is *I. echinospora* var. *braunii* and as a distinct species *I. muricata* Dur. The species *Dryopteris austriaca* Jacq. is accepted in the inclusive sense that I myself adopted in my treatment of the eastern ferns in Gleason's "New Illustrated Flora" (1952). I still think that this is a possible treatment of the group, but recent cytological studies have indicated that it might be better to recognize several species.



If so, the position in the Pacific Northwest is far from clear. Most of the plants would fall into what has been called a diploid *Dryopteris dilatata*. But the true *dilatata* from Europe (*D. austriaca* Jacq. var. *austriaca*) is a tetraploid, and it has been suggested that our Pacific coast *dilatata* is really the diploid species *D. assimilis* S. Walker (in Clapham, Tutin, & Warburg, Brit. Fl. ed. 2. 1962) of the British Isles; this has been indicated not only by the chromosome number but also by chromatography. The true tetraploid *D. spinulosa* does apparently also reach into the Pacific Northwest, for I have seen a specimen that seems to be surely this rather than *D. assimilis* (Orogrande Creek, Clearwater County, Idaho, *Epling & Houck 9349*). The proper name for "*D. spinulosa*" (an illegitimate name) is still uncertain; the name *D. carthusiana* (Vill.) H. P. Fuchs has been accepted recently, but Jermy indicates that there is grave doubt that Villar's type is really this species; this kind of doubt is to be expected in a group like this that is cytologically complex and little understood even after intensive study for many years.—C. V. M.

A REVISED FLORA OF MALAYA, VOL. II—FERNS OF MALAYA, ED. 2, by R. E. Holttum. Gov't. Printing Office, Upper Serangoon Road, Singapore, 13. 1966. 653 pp. ca. \$7.50+postage.—The original edition of this popular and useful book appeared in 1954 (see this JOURNAL 46: 158. 1956). Despite one reprinting, it has been out of print for several years. The new edition is largely identical to the first. A few pages, however, are totally redone and Appendix II, a ten-page list of changes and corrections to the first edition, is added. In recent years several studies bearing on the Malayan fern flora have been published, principally by Prof. Holttum and Mrs. B. E. G. Molesworth Allen. Besides incidental changes in many genera, considerable emendations have been made in *Cyathea*, *Dicranopteris*, *Gleichenia*, *Lygodium*, and *Ophioglossum*, and *Diplazium* has been separated from *Athyrium*. Entries in the main text that are amplified or corrected in Appendix II have been marked with an asterisk. Names in Appendix II unfortunately have not been included in the index. For readers who have the